What is claimed is :

1. A semiconductor device comprising a semiconductor layer, which comprises a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as the main component of the Group III-elements and N as the main component of the Group V-elements, and a Schottky junction metal layer which is on contact with the semiconductor layer, wherein:

said Schottky junction metal layer comprises a laminated structure wherein a first metal layer is in contact with said semiconductor device, a second metal layer is in contact with the first metal layer, and a third metal layer is in contact with the second metal layer;

said second metal layer comprises a metal material having a higher melting point than those of metal materials in said first metal layer and said third metal layer; and

said third metal layer comprises a metal having a lower resistivity than those of metal materials in said first metal material and said second metal material.

2. A semiconductor device according to claim 1, wherein said first metal layer comprises any metal material selected from a group comprising Ni, Pt, Pd, Ni_zSi_{1-z}, Pt_zSi_{1-z}, Pd_zSi_{1-z}, Ni_zN_{1-z}, and Pd_zN_{1-z} (where, $0<z<1$); and
said second metal layer comprises any metal material selected from a group comprising Mo, Pt, W, Ti, Ta, Mo_xSi_{1-x}, $PtxSi_{1-x}$, W_xSi_{1-x}, Ti_xSi_{1-x}, Ta_xSi_{1-x}, Mo_xN_{1-x}, W_xN_{1-x}, Ti_xN_{1-x}, and Ta_xN_{1-x} (where, $0<x<1$).

3. A semiconductor device according to claim 2, wherein said third metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.

4. A semiconductor device according to claim 1, wherein said first metal layer comprises any material selected from a group comprising $Ni_{z1}Si_{1-z1}$ (where, $0.4 \leqq z1 \leqq 0.75$), $Pt_{z2}Si_{1-z2}$ (where, $0.5 \leqq z2 \leqq 0.75$), $Pd_{z3}Si_{1-z3}$ (where, $0.5 \leqq z3 \leqq 0.85$), $Ni_{z4}N_{1-z4}$ (where, $0.5 \leqq z4 \leqq 0.85$), and $Pd_{z5}N_{1-z5}$ (where, $0.5 \leqq z5 \leqq 0.85$); and
said second metal layer comprises any material selected from a group comprising any of Mo, Pt, W, Ti, Ta, Mo_xSi_{1-x}, Pt_xSi_{1-x}, W_xSi_{1-x}, Ti_xSi_{1-x}, Ta_xSi_{1-x}, Mo_xN_{1-x}, W_xN_{1-x}, Ti_xN_{1-x}, and Ta_xN_{1-x} (where, $0<x<1$).

5. A semiconductor device according to claim 4, wherein said third metal layer comprises any material selected from a group comprising any of Au, Cu, Al, and Pt.

6. A semiconductor device according to claim 1, wherein said first metal layer comprises a metal material having a higher work function than that of said second metal layer.

7. A semiconductor device according to claim 6, wherein said first metal layer comprises a metal material having a higher work function than that of said third metal layer.

8. A semiconductor device according to claim 1, wherein the melting point of said second metal layer is 1,000°C or higher.

9. A semiconductor device according to claim 1, wherein said semiconductor layer is formed on a multilayered structure comprising a plurality of compound semiconductor layers formed on a substrate.

10. A semiconductor device according to claim 9, wherein said substrate comprises any substrate selected from a group comprising a sapphire substrate, a SiC substrate and a GaN substrate.

11. A semiconductor device according to claim 1, wherein said semiconductor layer is an $Al_uGa_{1-u}N$ layer (where, $0 \leqq u \leqq 1$).

12. A semiconductor device according to claim 1, wherein said semiconductor layer is a GaN compound semiconductor electron supplying layer formed on a GaN compound semiconductor channel layer.

13. A semiconductor device according to claim 12, wherein said GaN compound semiconductor channel layer comprises a compound semiconductor selected from a group comprising GaN and InGaN, and said GaN compound semiconductor electron supplying layer comprises AlGaN.

14. A semiconductor device according to claim 1, wherein said semiconductor layer is a GaN compound semiconductor channel layer formed on a GaN compound semiconductor electron supplying layer.

15. A semiconductor device according to claim 14, wherein said GaN compound semiconductor channel layer comprises a compound semiconductor selected from a group comprising GaN and InGaN, and said GaN compound semiconductor electron supplying layer comprises AlGaN.

16. A semiconductor device according to claim 1, wherein said semiconductor layer is a n-type GaN channel layer.

17. A semiconductor device comprising a semiconductor layer comprising a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as a main component of the Group III-elements and N as a main component of the Group V-elements and a Schottky junction metal layer which is in contact with the semiconductor layer, wherein:
said Schottky junction metal layer comprises a laminated structure comprising a first metal layer which is in contact with said semiconductor layer and a second metal layer which is in contact with said first metal layer; and
said first metal layer comprises a metal material having a higher melting point than that of the metal material in said second metal layer and said second metal layer comprises a metal material having a lower resistivity than that in the metal material of said first metal layer.

18. A semiconductor device according to claim 17, wherein said first metal layer comprises any metal material selected from a group comprising Ni_ySi_{1-y}, Pt_ySi_{1-y}, Pd_ySi_{1-y}, Ni_yN_{1-y}, and Pd_yN_{1-y} (where, $0<y<1$).

19. A semiconductor device according to claim 18, wherein said second metal layer comprises any metal material selected from a group comprising Au, Cu, Al and Pt.

20. A semiconductor device according to claim 17, wherein said first metal layer comprises any metal material selected from a group comprising $Ni_{y1}Si_{1-y1}$ (where, $0.4 \leqq y1 \leqq 0.75$), $Pt_{y2}Si_{1-y2}$ (where, $0.5 \leqq y2 \leqq 70.5$), $Pd_{y3}Si_{1-y3}$ (where, $0.5 \leqq y3 \leqq 0.85$), $Ni_{y4}N_{1-y4}$ (where, $0.5 \leqq y4 \leqq 0.85$), and $Pd_{y5}N_{1-y5}$ (where, $0.5 \leqq y5 \leqq 0.85$).

21. A semiconductor device according to claim 20, wherein said second metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.

22. A semiconductor device according to claim 17, wherein said first metal layer has a higher work function than that of said second metal layer.

23. A semiconductor device according to claim 17, wherein the melting point of said first metal layer is 1,000°C or higher.

24. A semiconductor device according to claim 17, wherein said semiconductor layer is formed on a multilayered structure comprising a plurality of compound semiconductor layers formed on a substrate.

25. A semiconductor device according to claim 17, wherein said substrate comprises any substrate selected from a group comprising a sapphire substrate, a SiC substrate, and a GaN substrate.

26. A semiconductor according to claim 17, wherein said semiconductor layer is an $Al_uGa_{1-u}N$ layer (where, $0 \leqq u \leqq 1$).

27. A semiconductor device according to claim 17, wherein said semiconductor layer is a GaN compound semiconductor electron supplying layer formed on a GaN compound semiconductor channel layer.

28. A semiconductor device according to claim 27, wherein said GaN compound semiconductor channel layer comprises a compound semiconductor selected from a group comprising GaN and InGaN, and said GaN compound semiconductor electron supplying layer comprises AlGaN.

29. A semiconductor device according to claim 17, wherein said semiconductor layer is a GaN compound semiconductor channel layer formed on a GaN compound semiconductor electron supplying layer.

30. A semiconductor device according to claim 29, wherein said GaN compound semiconductor channel layer comprises a compound semiconductor selected from a

group comprising GaN and InGaN, and said GaN compound semiconductor electron supplying layer comprises AlGaN.

31. A semiconductor device according to claim 17, wherein said semiconductor layer is a n-type GaN channel layer.

32. A semiconductor device comprising a semiconductor layer which comprises a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as a main component of the Group III-elements and N as a main component of the Group V-elements and a Schottky junction metal layer which is in contact with the semiconductor layer, wherein:
said Schottky junction metal layer comprises a laminated structure wherein a first metal layer is in contact with said semiconductor layer, a second metal layer is in contact with said first metal layer, and a third metal layer is in contact with said second metal layer;
said first metal layer comprises any metal material selected from a group comprising Ni, Pt, Pd, Ni_zSi_{1-z}, Pt_zSi_{1-z}, Pd_zSi_{1-z}, Ni_zN_{1-z}, and Pd_zN_{1-z} (where, $0<z<1$);
said second metal layer comprises any metal material selected from a group comprising Mo, Pt, W, Ti, Ta, Mo_xSi_{1-x}, $PtxSi_{1-x}$, W_xSi_{1-x}, Ti_xSi_{1-x}, Ta_xSi_{1-x}, Mo_xN_{1-x}, W_xN_{1-x}, Ti_xN_{1-x}, and Ta_xN_{1-x} (where, $0<x<1$); and
said third metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.

33. A semiconductor device comprising a semiconductor layer which comprises a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as a main component of the Group III-elements and N as a main component of the Group V-elements and a Schottky junction metal layer which is in contact with the semiconductor layer, wherein:
said Schottky junction metal layer comprises a laminated structure wherein a first metal layer is in contact with said semiconductor layer and a second metal layer is in contact with said first metal layer;
said first metal layer comprises any metal material selected from a group comprising Ni_ySi_{1-y}, Pt_ySi_{1-y}, Pd_ySi_{1-y}, Ni_yN_{1-y}, and Pd_yN_{1-y} (where, $0<y<1$); and
said second metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.

34. A semiconductor device comprising a semiconductor layer which comprises a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as a main component of the

Group III-elements and N as a main component of the Group V-elements and a Schottky junction metal layer which is in contact with the semiconductor layer, wherein:

said Schottky junction metal layer comprises a laminated structure wherein a first metal layer is in contact with said semiconductor layer and a second metal layer is in contact with said first metal layer and a third metal layer is in contact with said metal layer;

said first metal layer comprises any metal material selected from a group comprising $Ni_{z1}Si_{1-z1}$ (where, $0.4 \leqq z1 \leqq 0.75$), $Pt_{z2}Si_{1-z2}$ (where, $0.5 \leqq z2 \leqq 0.75$), $Pd_{z3}Si_{1-z3}$ (where, $0.5 \leqq z3 \leqq 0.85$), $Ni_{z4}N_{1-z4}$ (where, $0.5 \leqq z4 \leqq 0.85$), and $Pd_{z5}N_{1-z5}$ (where, $0.5 \leqq z5 \leqq 0.85$);

said second metal layer comprises any metal material selected from a group comprising Mo, Pt, W, Ti, Ta, Mo_xSi_{1-x}, Pt_xSi_{1-x}, W_xSi_{1-x}, Ti_xSi_{1-x}, Ta_xSi_{1-x}, Mo_xN_{1-x}, W_xN_{1-x}, Ti_xN_{1-x}, and Ta_xN_{1-x} (where, $0<x<1$); and

said third metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.

35. A semiconductor device comprising a semiconductor layer which comprises a compound semiconductor using Ga_vAl_{1-v} (where, $0 \leqq v \leqq 1$) as a main component of the Group III-elements and N as a main component of the Group V-elements and a Schottky junction metal layer which is in contact with the semiconductor layer, wherein

said Schottky junction metal layer comprises a laminated structure wherein a first metal layer is in contact with said semiconductor layer and a second metal layer is in contact with said first metal layer;

said first metal layer comprises any metal material selected from a group comprising $Ni_{y1}Si_{1-y1}$ (where, $0.4 \leqq y1 \leqq 0.75$), $Pt_{y2}Si_{1-y2}$ (where, $0.5 \leqq y2 \leqq 70.5$), $Pd_{y3}Si_{1-y3}$ (where, $0.5 \leqq y3 \leqq 0.85$), $Ni_{y4}N_{1-y4}$ (where, $0.5 \leqq y4 \leqq 0.85$), and $Pd_{y5}N_{1-y5}$ (where, $0.5 \leqq y5 \leqq 0.85$); and

said second metal layer comprises any metal material selected from a group comprising Au, Cu, Al, and Pt.